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·Leadership Series·

By Vaughan Merlyn and Sheila Smith

Be Careful What You Wish For

Managing technology's unintended consequences

By Vaughan Merlyn and Sheila Smith

As IS executives, we're great at planning what we want to happen, but we rarely consider the possible unintended consequences of our plans. How can we uncover the unexpected?

Hopes were high that summer of '95, as the IS management team at a major financial services company created a new vision for planning projects and setting target dates. Collaboration would be key: Business and IS would work together to make the necessary trade-offs to reach solid, achievable target dates for new systems. Business requirements would drive the planning and the trade-offs to be reached around scheduling, cost, quality, scope and resources. Never again would a project be driven by arbitrary end dates. Never again would the delivery date be master and the IS professional be slave.

Six months later, disaster struck. The company failed to get a key Internet-based product to market in time to beat the competition. Why? The underlying information technology just wasn't ready. The new year began with little to celebrate.

With the new project-planning method, how did this happen? Like a villain kidnapping an innocent victim, something crept up on the project and blindfolded it from behind — an unintended consequence of a well-intentioned change.

Somewhere along the way, the message became garbled. What IS folks heard was, "No more date-driven projects," rather than, "Collaborate with your business partner to set the date based on business needs." And since collaboration wasn't being rewarded, the IS group felt the message was clear: Plan the project in detail, and tell the business side what the date would be. The discussions never happened; the trade-offs were never made. Had those discussions taken place, the people involved might have opted to get a basic product to market quickly and add more functionality incrementally, reaping the benefits of being "first to market."

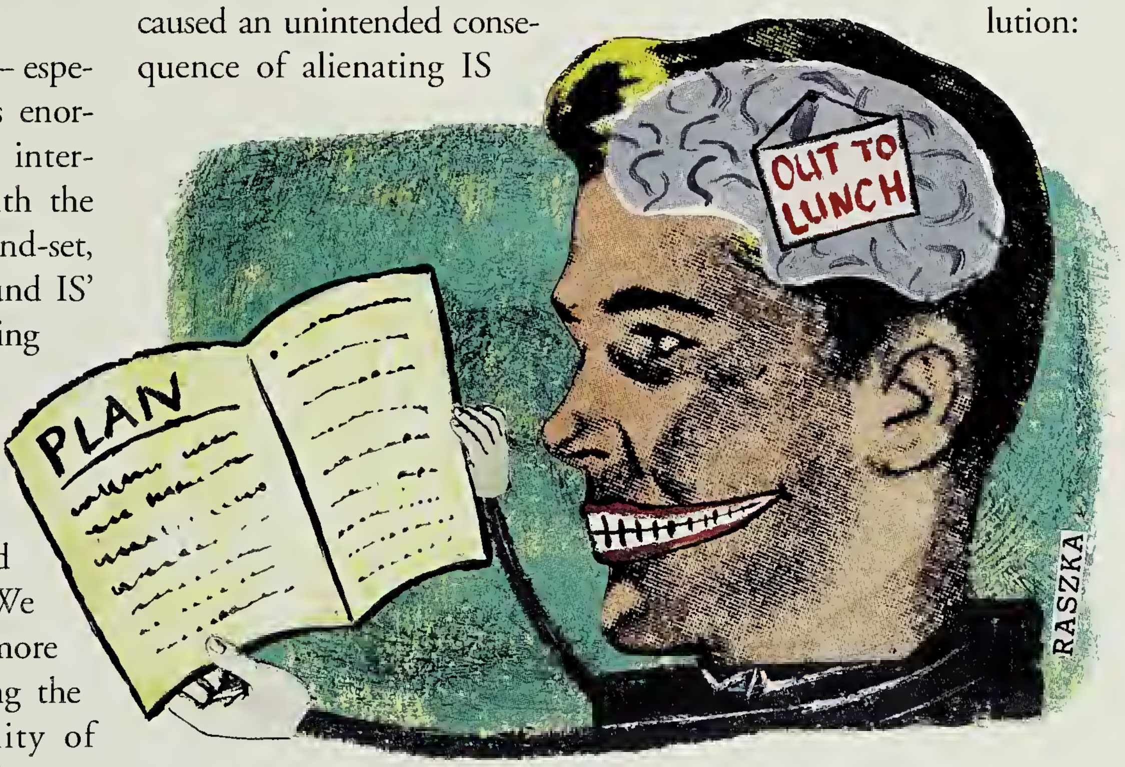
Good intentions gone bad are an all-too-common surprise for IS managers. Although most of us are excellent at thinking about what we want to happen — the desired outcomes and the *intended* consequences — we rarely stop to consider what could happen — the possible *unintended* consequences. So, what's missing from our efforts that causes these unintended consequences?

Illustrations by Brian Raszka

Why didn't we think of that before?

At the root of unintended consequences is a failure of thinking. We fail on multiple levels.

The first failure is assuming that IS projects are more logical, straightforward and free of political considerations than they actually are. We have been taught that the world is a simple, mechanistic place. So we plan and analyze under the assumption that there are simple cause-and-effect links between our actions and results.



In reality, the world — especially the IS world — is enormously complex. Subtle interrelationships, coupled with the natural IS engineering mind-set, become an albatross around IS' neck in terms of anticipating unintended consequences. The engineer designs a logical process that, when followed, is intended to lead to desired outcomes. We need, instead, to think more like ecologists, recognizing the inherent unpredictability of complex systems and looking at the whole environment as we plan and take action.

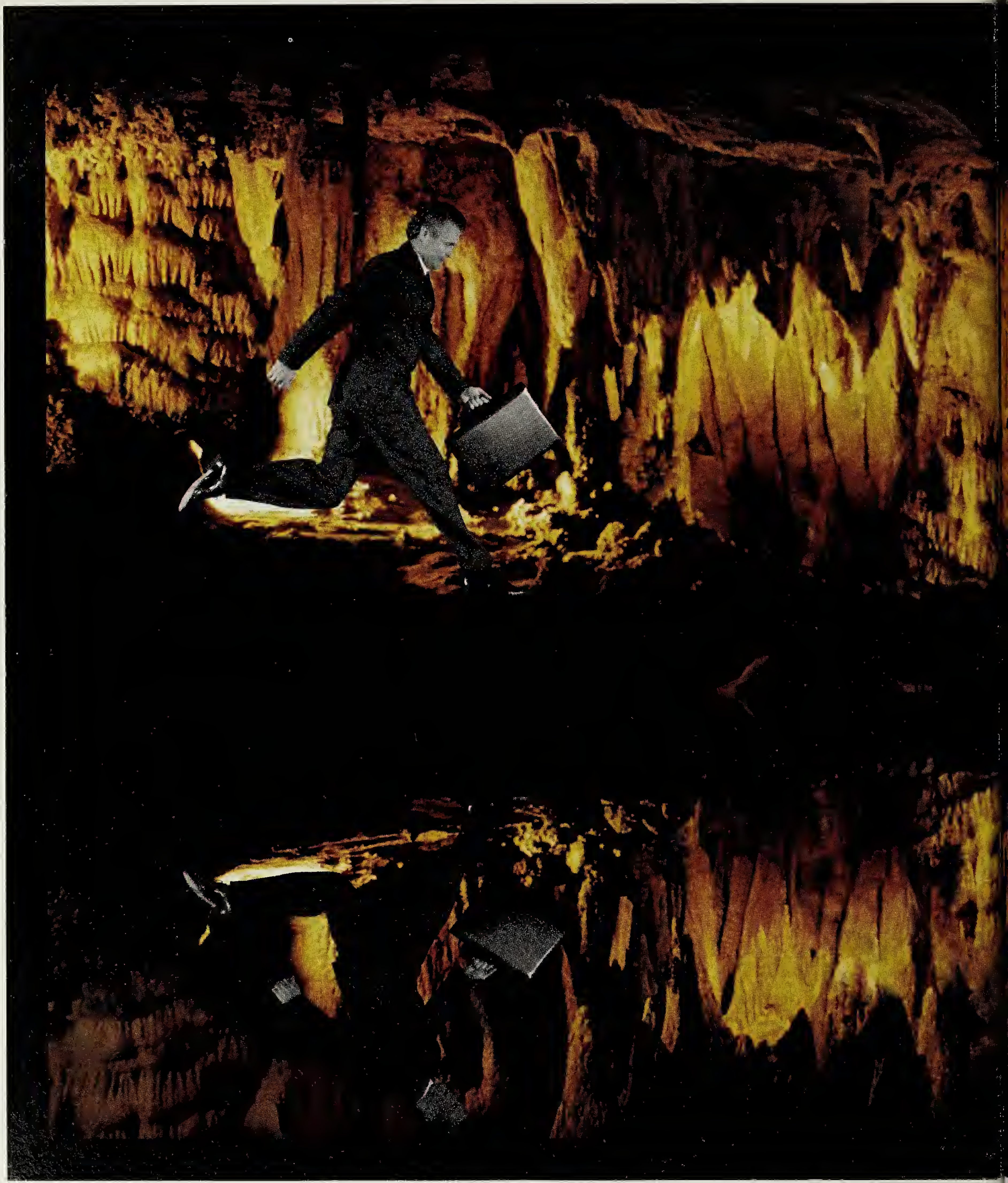
Take the case of a large oil company at which this "engineering approach" derailed efforts to implement an information technology architecture.

After creating a new IT architecture, the company's IS group established a unit to be the "keepers and enforcers" of the architecture. The unit reviewed all new IS projects to ensure conformance. Within six months, the "architecture police," as they came to be known, were a bottleneck that delayed projects and alienated both business managers and developers. Also, the architecture failed to prevent businesspeople from acquiring their own technologies, regardless of whether these conformed to the architecture. Within the year, the group disbanded.

The simplicity assumed by an engineering mind-set not only resulted in a failure to reach the architecture objectives, but also caused an unintended consequence of alienating IS customers and damaging relationships.

The second level of failure is often a matter of decision-making style and a lack of thought about the larger context. One CIO of a global manufacturing company admits the need for a co-pilot to help him think through and spot unintended consequences. "Once I make a decision, I tend never to look back. I need someone right there with me as I make choices, challenging me to think about what might happen. I always have time to manage; I must make the time to think." This decision-making style, which incorporates a bias for action with little post-action reflection, can make for embarrassing surprises, as described in the following scenario:

This particular CIO was faced with a problem familiar to many CIOs — dysfunctional relationships between IT and business. The solution: Quickly form a group of senior IS professionals focused on building relationships by consulting with business units about IS needs and structuring projects to meet those needs. The relationships improved at record speed, as requests for IS projects came rushing in, a result of the group's hard work at mending fences. Great news! Finally, the businesspeople were talking to IT about how to enhance their processes using information technology.



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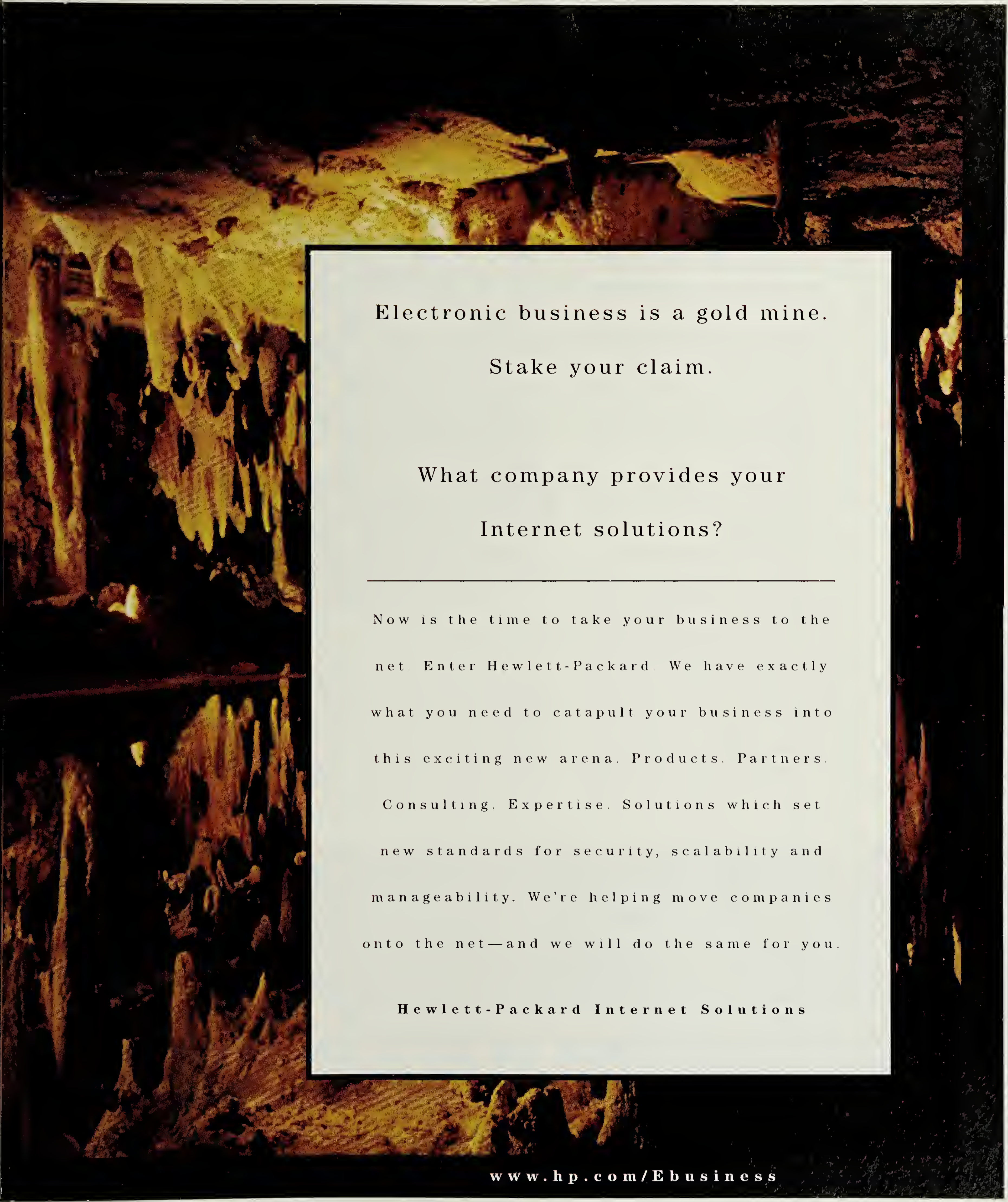Electronic business is a gold mine.
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But bad news came fast on the heels of this burst of hope. Lacking a process for prioritizing IT investments, IS was left with a mountain of projects of varying business value and insufficient resources to carry them out. You guessed it: The best intentions of improving relationships actually worsened them when certain requests were denied or deferred. The bias-for-action style, coupled with a lack of thought given to defining the context in which the group would be deemed successful, caused this IS executive a serious embarrassment.

A final level on which we can fail involves our way of viewing technology, which can contribute to unintended consequences. A stark example of how a specific mind-set led to severe, unintended consequences appears in a particular division of a chemical manufacturer. For years, division executives viewed IT as a cost, not an investment. The goal: Minimize the percentage of revenue spent on IT. The IS group complied, reducing the level of spending to the lowest in the industry. New development was cut, hardware acquisition slowed, and key projects were deferred.

The unintended consequence of this cost minimization goal showed up rapidly and dramatically. Little investment was made to ensure that platforms were common and upgraded consistently. Without common platforms, communication among internal and external customers suffered, and without a proper infrastructure, business growth was hampered. Head count reduction produced lower costs in the IS organization, but business units started to hire their own IS people, resulting in hidden costs in the form of a shadow IS organization. Those good intentions born of a specific mind-set about IT costs inadvertently resulted in higher IS costs.

Uncovering the unexpected

Nabbing unintended consequences before they nab you is the name of the game. A few simple techniques can help.

One is to analyze unintended consequences up front. Try the following quick exercise to help you think through what might happen in a given situation. (See "The 'What Could Happen' Test" on page 7 for how this exercise works for the project end-date example mentioned at the beginning of this article.)

First, clarify what you're really after. Start with how the desired situation is framed (in this case, from the perspective of the IS professional) and the intended result. Then ask yourself, "What could happen if the change is not handled properly?" Think about role confusion and likely misinterpretations.

This exercise will not only alert you to possible unintended consequences, but it may also

IS and the art of cooking pigs

"The reason IS management actions often lead to unintended consequences is a failure of theory. When managers see something that doesn't fit, they use a technique they are comfortable with — going after more data. We don't need more data, we need more thinking. Think, learn, examine. These are the tools to avoid unintended consequences."

So notes Barry Stein, president of Goodmeasure, Inc., a Cambridge, Mass.-based organizational change consulting firm. To highlight IS managers' tendency to react to symptoms without fully understanding underlying problems, Stein draws an anology, relating an essay by 19th-century British writer Charles Lamb, in which Lamb imagined how humanity discovered cooking.

Millions of years ago, Lamb supposed, people lived in large extended families, with domestic animals, in crude houses built of wood and thatch. One day, a house caught fire; the only casualty was a neighborhood pig. When the residents returned, all that was left was a plume of smoke, a pile of ashes and a wonderful smell. Eventually, some of the people poked in the ashes and burned their fingers touching the carcass of the still hot, incinerated pig. When they put their burned fingers in their mouths to cool the burn, a delicious taste appeared. They had, Lamb said, discovered cooking.

Thereafter, when the people of the village wanted to celebrate, they picked out a house, put a pig inside it and burned the house down.

The moral, according to Stein: "If you don't understand what's cooking the pig, you are going to waste an awful lot of houses."

uncover that the desired situation as stated is not the one you want.

The financial services company mentioned in the example did not really desire a state in which "projects are no longer driven by arbitrary target dates," but rather one in which "project target dates are estimated collaboratively by IS and the business customer, based on business requirements, a project plan and a discussion of trade-offs among schedule, cost, quality, scope and resources."

Once you're clear on what you're after, examine the elements of what is desired (such as collaboration, planning, open discussions of trade-offs) and ensure that a common understanding of these elements is shared by those who must change. For IS's internal customers, planning IS projects may be a whole new experience. You must anticipate the customers' confusion and address it, or be ready for unintended consequences.

Next, anticipate that people will act according to incentives and rewards. Naomi Bloom, managing partner at Bloom and Wallace, a consulting firm in Fairfax, Va., that helps organizations re-engineer their human-resource business process, concurs. "Even if people understand what is expected, they only behave that way if all the supporting human-resource management elements are in place," Bloom says.

Causal loop diagramming is another technique that will help you look at an issue holistically and anticipate unintended conse-

The "What Could Happen" Test

Stated Desired Situation	Intended Result	Possible Unintended Consequences
Projects are no longer driven by arbitrary target dates.	More accurate, realistic estimating of projects. Projects more likely to be delivered on schedule. Less burnout of and stress on project teams. Balanced decision-making regarding end dates, resources, quality and scope. Increased business satisfaction with IT.	Business misses opportunities to get products to market in a timely, competitive manner. Project scope is larger than necessary: A Cadillac gets built when only a Chevette is needed. System is tested forever or trapped in analysis paralysis.

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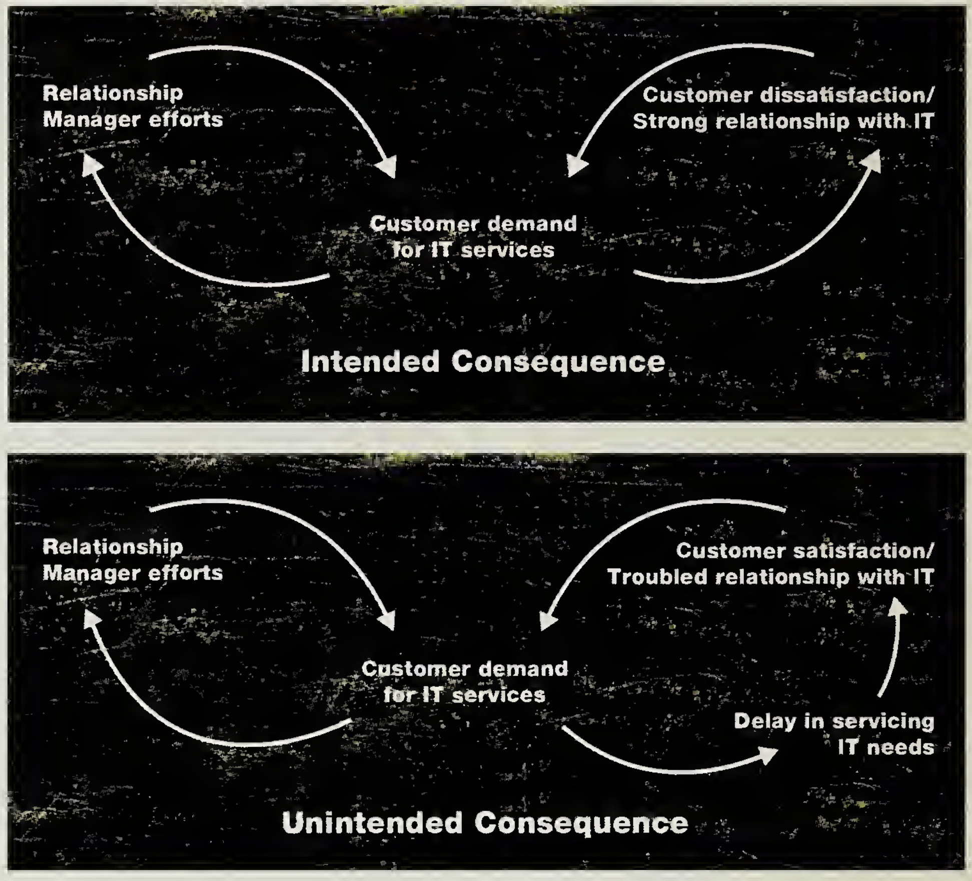
quences. This diagram was originated by MIT Professor Jay Forrester and popularized by Peter Senge, author of *The Fifth Discipline: The Art and Practice of the Learning Organization* (Doubleday, New York, 1990), and Pegasus Communications, Inc., a Cambridge, Mass., publisher of the *Systems Thinker* newsletter. This technique would have been invaluable for the CIO who was trying to mend relationships and ended up destroying them instead. (See chart above.)

Spotting unintended consequences in the making is like sending out scouts to see what lies ahead. It's also similar to looking for emerging scenarios in scenario planning, which anticipates different future business worlds. As Peter Schwartz advises in *The Art of the Long View* (Doubleday, New York, 1991), "In the real world, you don't know ahead of time which scenario will take place. But you prepare for several of them, and then train yourself to look for one or two small details so that you can recognize the full scenario before it happens."


Relationship Manager efforts
Customer dissatisfaction/ Strong relationship with IT
Customer demand for IT services
Intended Consequence
Relationship Manager efforts
Customer satisfaction/ Troubled relationship with IT
Customer demand for IT services
Delay in servicing IT needs
Unintended Consequence

Causes and Consequences

The Relationship Managers generate a huge demand for IT services, initially increasing customer satisfaction and relationship with IT. But as demand increases without a way of prioritizing orders or increasing resources, delays in servicing occur and customer satisfaction and relationship with IT deteriorate.

We don't know which unintended consequence might happen, so we prepare for each, noting hints of trouble (see "Signs of Trouble," below). The chart shows an example of how the financial services company might have spotted a few unintended consequences in the making.

Signs of Trouble

Unintended Consequence	Indicator or Sign
Project scope is larger than necessary: A Cadillac gets built when only a Chevette is needed.	Business community is not active in requirements analysis and prototyping. No project charter is collaboratively developed with the business. The business side seems disconnected with the project team.
Business misses opportunities to get products to market in a timely, competitive manner.	Timing needs and issues are not discussed as part of the project chartering process. Key business managers who understand market timing issues are not part of the project team or are not in the regular review loop.

From anticipation to action

When you see an unintended consequence in the making, don't berate yourself. Instead, reflect briefly, then act fast. Here are some guidelines:

- Don't deny what's happening.
- Take time to revalidate what you intended to happen. Clarify the intended outcomes by describing them in terms of visible behaviors and day-to-day actions.
- Step back and see why the unintended consequence came about.
- See what opportunities exist for correction. For example, in the case of the manufacturing company CIO who generated more IS requests than could be handled, several opportunities existed for correction. He could have defined a prioritization process for all IT investments, added more IS resources to meet demand, opened discussions with specific users about their priorities, regulated the new group's interaction with users or pursued some combination of these.
- Consider whether the corrective action will cause other unintended consequences.
- Act quickly!

In the manufacturing company example, the CIO realized that as demand built and could not be met, he should not rush off to get more resources, a step that might exacerbate the situation. Instead, after deeper reflection on what he originally intended — building better relationships — he found a way to both correct the unintended consequence and further develop relationships with the users. He used the golden opportunity of working with the business side on a process to set priorities for their IT investments.

Thinking through the issue to ensure you'll get what you want takes a bit of extra effort. The choice is yours. However, if you decide not to spend the time and energy thinking through the possible unintended consequences and how to manage them, be prepared. Who knows what you'll get! ◆

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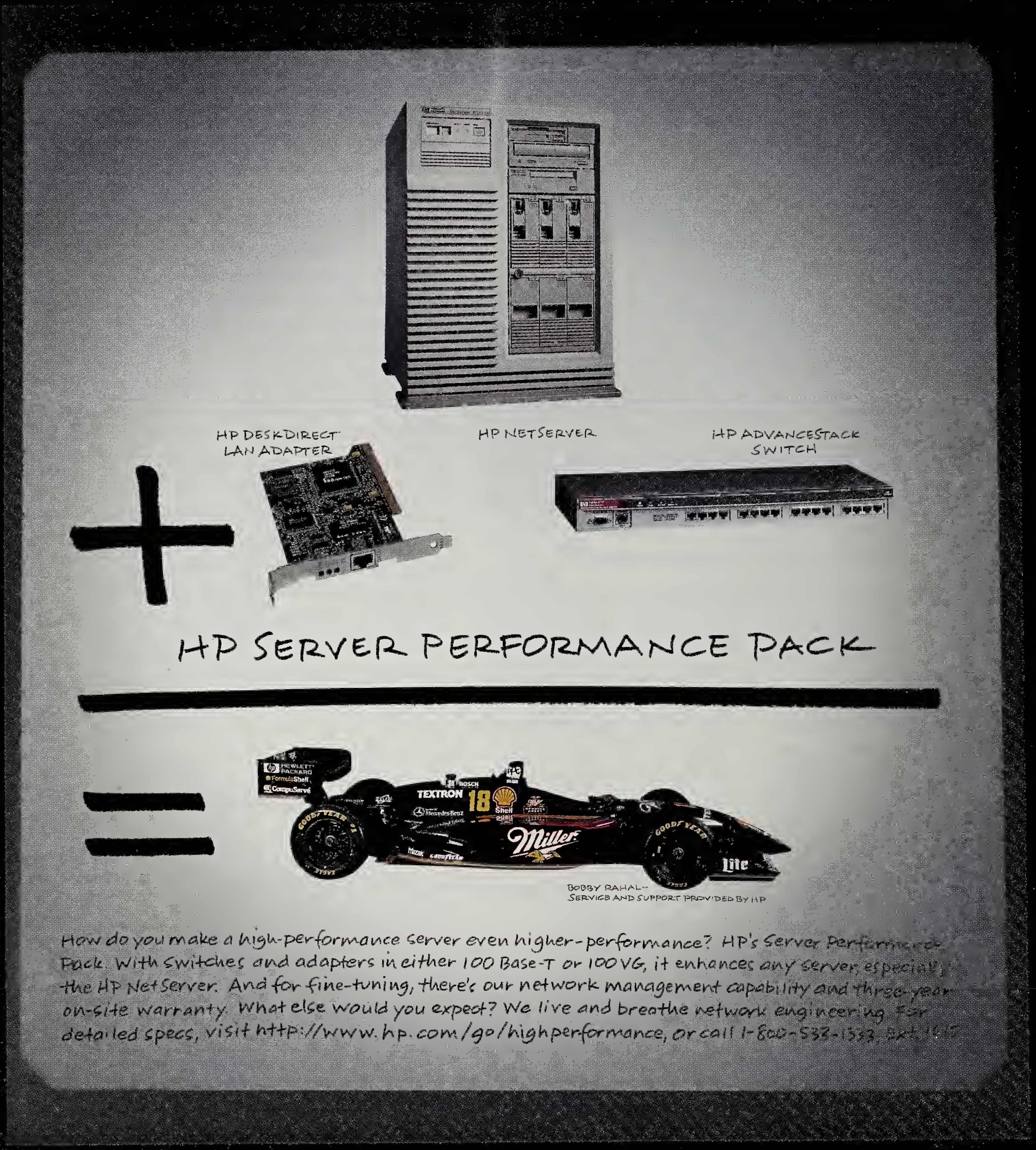
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